

U.S. Serial No. 10/809,227
Response to Final Office Action of June 3, 2009

PATENT
450100-05089

REMARKS

In light of the remarks to follow, reconsideration and allowance of this application are respectfully requested.

In the Office Action under reply, claims 1, 2, 4, 5, 7, 15, 18 and 21, all the claims remaining in this application, were rejected under 35 USC 103 as being obvious in view of the patents to Shiotsu (U.S. Patent 7,142,204) in combination with Gill (U.S. Patent 6,198,773). Shiotsu was relied upon for allegedly teaching means for measuring the amount of energy that was consumed during a decoding time interval, means for estimating the amount of energy anticipated to decode and display remaining motion picture data as a function of the measured amount of energy that was consumed and means for controlling the decoding means on the basis of a difference between the anticipated energy needed for decoding and displaying the motion picture data and the remaining energy of the electric power source to dynamically control the playing quality of the motion picture data. Gill was relied upon for allegedly teaching reducing the number of bits per pixel when decoding motion picture.

Applicant's representative wishes to thank the Examiner for the courtesy of the telephone interview of July 30, 2009. As a result of that interview the independent claims are amended to clarify the claimed feature of controlling the decoding of frames of motion picture data by "controlling the number of bits per pixel data" of the decoding means " ... by selectively reducing said number of bits per pixel."

Applicant's claim 1, for example, recites, *inter alia*:

means for measuring the amount of energy that was consumed during a decoding time interval;

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means for estimating the amount of energy anticipated to decode and display remaining motion picture data as a function of the measured amount of energy that was consumed;

a controlling means for controlling the number of bits per pixel of the decoding means on the basis of a difference between said anticipated energy needed for decoding and displaying the motion picture data and the remaining energy of the electric power source to dynamically control the playing quality of the motion picture data...

These features are neither suggested nor taught by Shiotsu. As discussed in Applicant's previous amendment filed March 30, 2009, Shiotsu describes conserving battery power in a notebook PC when receiving television programs that may be transmitted in standard definition (SDTV) or high-definition (HDTV). "Remaining battery capacity information" is acquired and the "potential-viewing-duration" of the received program is calculated based upon the remaining battery capacity and whether the received television program is transmitted in SDTV or HDTV format. If the potential viewing duration for an HDTV program is less than a predetermined amount, the television receiving circuitry in the notebook PC is switched "to a lower-image-quality channel" (see column 5, lines 23-31 of Shiotsu).

Shiotsu does not disclose how he acquires his remaining battery capacity information. Presumably, Shiotsu simply measures the output voltage of his battery. There is no teaching or suggestion in Shiotsu of measuring the amount of energy that was consumed during a decoding time interval and then using that measurement to estimate the amount of energy needed to decode the remaining motion picture data. Shiotsu does not acquire the remaining battery capacity by measuring the amount of energy that was consumed previously.

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Additionally, Shiotsu provides no control over the MPEG decoder provided in his notebook PC based upon whether or not there is sufficient energy in his battery to decode the received television program. Rather, Shiotsu simply switches his television receiver from an HDTV channel to an SDTV channel if there is not sufficient battery capacity to display the HDTV program. Shiotsu does not explain how his notebook PC operates in the event an SDTV program is being received but there is not sufficient battery capacity to display the remainder of the program. Shiotsu fails to disclose control over decoding means to dynamically control the playing quality of the received program in the event his remaining battery capacity is less than the capacity needed to display the rest of that received program. It is respectfully submitted, switching the channel to which Shiotsu's receiver is tuned, i.e., from an HDTV channel to an SDTV channel, has nothing to do with controlling a decoder. Moreover, by changing from one channel to another, the received television program simply is switched -- the playing quality of the originally received television program is not changed, it simply is canceled. Rather than control the playing quality of the television channel selected by the user, Shiotsu merely prevents the user from watching his selected program. Stated otherwise, the playing quality of the program selected by the user is not dynamically controlled; rather, the program simply is canceled.

Gill is directed to a memory management system for handling video memory used for decoding and displaying a bitstream of compressed video data (col. 5, lines 26-29). From the Examiner's reference to col. 17, lines 52-63 of Gill, it is believed the relevant description in Gill relates to his "Simple Fixed Low Bitrate Auxiliary Compression Technique without Considering the Methods and Usages (or named by the inventors as "FlexiRam")" (col. 6, lines 39-40 of

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Gill). Gill describes his FlexiRam design at col. 14, lines 13-59. Video data is compression encoded "according to an error diffusion algorithm ... using a one-bit error diffusion algorithm." Gill's encoding means compresses a 32 bit pixel quartet to 28 bits (col. 14, lines 23-26). Then, the 7-bit quartet is compressed to a 24-bit quartet (col. 14, lines 31-38). During decoding, the 24-bit quartet is restored to 28 bits, that is, the number of bits representing the pixels is increased (col. 14, lines 45-54). Thereafter, the 28-bit pixel quartet is returned to reform the four 8-bit (or 32-bit) pixels, that is the number of bits representing the pixels is further increased in Gill's decoder.

Gill's Fig. 15, referenced by the Examiner as evidence of Gill's decoder bit reduction, is described at col. 14, line 60 to col. 15, line 6. Here, Gill describes his encoder, or data compressor, that reduces his 8-bit quartet to a 7-bit quartet, resulting in compressed data that is stored in a video memory. "When the video data is needed from the video memory, the compressed data is decompressed" (col. 15, lines 4-5, emphasis added). Decompression, or decoding, reconstructs the 7-bit quartets to 8-bit quartets. That is, bits per pixel are increased, not decreased.

Compare these clear teaching of Gill to Applicant's claim 1, which recites, "control the playing quality of the motion picture data by selectively reducing said number of bits per pixel" of the decoding means. Contrary to claim 1, Gill adjusts the number of bits per pixel in his decoder by increasing the number of those bits. This is the very opposite of Applicant's claim 1. As a result, by increasing the number of bits in Gill's decoded video data, it is expected that the quality of the decoded video data will increase. Gill teaches away from the aforementioned feature of bit reduction in Applicant's claimed decoding means.

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Thus, if Gill is combined with Shiotsu, the logical result would be to switch the channel to which Shiotsu's notebook PC is tuned from an HDTV channel to an SDTV channel if the battery capacity in that PC is not sufficient to display the HDTV program, and then to increase the number of bits that are used to represent each pixel in the switched SDTV program. It is respectfully submitted, the cumulative teachings of Shiotsu and Gill fail to suggest:

means for measuring the amount of energy that was consumed during a decoding time interval;

means for estimating the amount of energy anticipated to decode and display remaining motion picture data as a function of the measured amount of energy that was consumed;

a controlling means for controlling the number of bits per pixel of the

decoding means on the basis of a difference between said anticipated energy needed for decoding and displaying the motion picture data and the remaining energy of the electric power source to dynamically control the playing quality of the motion picture data by selectively reducing said number of bits per pixel.

Therefore, one of ordinary skill in the art, after reading and understanding both Shiotsu and Gill, would not be enabled thereby to make and use Applicant's image decoder of claim 1. Accordingly, the rejection of claim 1 as being obvious should be withdrawn.

Claim 2 depends from claim 1 and further limits and defines the present invention. Since claim 2 therefore includes all of the features recited by claim 1, it follows that claim 2 is unobvious for the same reasons argued above.

Claim 4 is directed to the method performed by the image decoder of claim 1 and recites the features recited in claim 1. Therefore, claim 4 is unobvious for the same reasons put forth in connection with claim 1.

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Claim 5 depends from claim 4 and, since claim 5 includes the features of claim 4, claim 5 is unobvious over the combination of Shiotsu and Gill.

Claim 7 is directed to “a program embodied in a computer-readable medium” for controlling image decoding to perform the method recited in claim 4. Claim 7 is patentably distinct over the combination of Shiotsu and Gill for the reasoning argued with respect to claim 4.

Claims 15, 18 and 21 are directed to decoding plural frames of image data, and recite the features of:

decoding the frames of image data of the encoded motion picture data at an adjustable number of bits per pixel;

anticipating the time needed to display a predetermined number of frames on the basis of the number of frames that can be displayed during a unit time and for controlling the decoding means to dynamically reduce the number of bits per pixel of the decoded image data when said anticipated time to display said predetermined number of frames is less than a predetermined threshold.

Shiotsu shows, in Fig. 4, how potential viewing time is displayed. This potential viewing time is based on the duration of a television program and whether that program is received in HDTV or SDTV format. There is no suggestion of calculating the potential viewing time as a function of the number of frames that can be displayed during a unit time and then determining how many frames remain to be displayed. Neither Shiotsu nor Gill suggest that, in a decoder, the number of bits per pixel of the decoded image data should be reduced when the amount of time needed to display the remaining image data is less than a predetermined threshold, that is, when there is not sufficient time to display that remaining image data. Gill simply increases the number of bits in his decoded pixel quartet without regard to the amount of time needed to

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display images formed of those pixels. Shiotsu fails to describe control over his decoding -- he merely switches from an HDTV program to an SDTV program if the anticipated time for viewing the HDTV program is too long.


Therefore, since the cumulative teachings of Shiotsu and Gill fail to describe or even suggest the aforequoted features of claims 15, 18 and 21, it follows that these claims are patentably distinct over this prior art. The rejection of these claims should be withdrawn.

Statements appearing above in respect to the disclosures in the cited references represent the present opinions of the undersigned attorney and, in the event the Examiner disagrees with any of such opinions, it is respectfully requested that the Examiner specifically indicate those portions of the references providing the basis for a contrary view.

Please charge any additional fees that may be needed, and credit any overpayment, to our Deposit Account No. 50-0320.

Respectfully submitted,

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